MEMORANDUM.

With the intention of securing greater accuracy in the system of estimating the outturn of harvests and uniformity in the exhibition of the statistics embodied in the final forecast reports on crops, the Government of India, in August 1891, called for information regarding the system adopted in each province and circulated a form of statement for criticism. The replies received afforded useful information and suggestions as to the method of calculating harvest yields.

2. The system generally followed is, that the area under crop being measured and accurately known, the outturn in annas is calculated by some officer for a certain area. The area and estimated outturn are reported to the Director of the Agricultural Department. For each area reported on, the Director has by him a standard of outturn per acre corresponding to a 16-anna crop, and by applying this he gets the estimated outturn. Thus if y represents the standard outturn per acre and a 12-anna crop on x acres is reported, the outturn is estimated at $\frac{12}{16}\,x\,y$. The area and estimated outturn of the province are then reported to the Government of India, by whom the provincial statistics are published in a combined form.

There are thus three items in the estimate, *viz.*, the "area," the "fraction," and the "standard."

3. As regards the area, there exists in the village establishments of most provinces an agency capable of reporting the acreage of crops with great accuracy wherever the fields have been mapped and surveyed. But, although yearly diminishing in extent, there are still important tracts for which at present statistics are not available, owing to the absence of maps or the non-existence of trained village establishments. For these tracts the areas as well as the outturn cannot be more than an estimate. These area-estimates, once framed, are too often allowed to become stereotyped and repeated year after year without regard to the influence of exceptional seasons or changes in the economical condition of the tracts. They should be revised with care annually by comparison with the conditions prevailing in surrounding areas of a similar character for which accurate information is available, and by means of such special enquiries as may be possible. To this end the estimates of unsurveyed areas, where they are large and important, should be shown separately in the returns from the figures relating to surveyed areas and should not be merged in the latter. This separation is already carried out to a large extent in the returns of agricultural statistics for British India.

4. In dealing with the calculation of areas, two other matters in which practice varies, demand consideration, *viz.*, (1) whether the area returned should be the area sown or that successfuly cropped, and (2) in the case of forecast crops which are sown

mixed with other crops, whether the total area covered with the mixed crops should be exhibited, or an area calculated to represnt the acreage covered by the forecast crop only.

As regards (1) the general rule should be that the returns should exhibit the areas actually sown, whether the crop comes to maturity or not. The failure of the crop should affect, not its area, but its outturn. An exception to this rule will, however, be made when fields, owing to the failure of the first sowings, have been devoted to other crops. In this case the area first sown with the forecast crop may be omitted. As to (2), the areas covered by the several crops in a mixed field are at present estimated in various ways in the different provinces, and the most suitable method of calculation of them is a question of some difficulty. But for purposes at least of the forecast, the area to be returned must be the area covered by the forecast crop, exclusive of the area covered by the other crops with which it is mixed. However rough the estimate of the area of the forecast crop may be, it will be less far from the truth than a return of the area of the whole mixed field as the area covered by the single forecast crop.

5. The method of arriving at standards for the conversion of anna estimates is under separate consideration, in connection with the requisition received from the Secretary of State for India for periodical returns of the average outturn per acre of the principal crops. In view, however, of the fact that the accuracy of a standard bears necessarily an inverse ratio to the extent of the area for which it is framed, and that in some provinces extremely wide areas have been adopted for the framing of a single standard, it is desirable that some limit should be introduced as early as possible, in regard to the unit of area for which standards should be framed; and that ordinarily it should not be larger than a táluka or tahsil. To ensure the correct application of the standards, the areas for which fractional anna-estimates are made and reported should invariably correspond with those for which standards are framed. Experience has shown, moreover, that the anna-estimates of village officers, when not systematically tested, become untrustworthy and misleading; and where they are not actually prepared by a responsible local official of rank, they should always be carefully checked by means of information independently collected from landholders. The resulting outturns for the province should also be tested in the office, in which the computation is made, by the light of trade returns, estimates of consumption (where such exist), and other cognate statistics. If the comparison indicates palpably misleading results in the crop returns, no time should be lost in amending the standards for the crops concerned.

6. Prefixed to this memorandum is the form of statement which should accompany the final forecast for each crop reported on. In previous instructions it has been laid down that the normal area and out-

turn should be calculated on the average of the last five years exclusive of exceptional seasons. Statistics are, however, now available for a considerable series of years, and it is no longer necessary to adhere to this scale. The normal area and outturn should be taken as the average of the whole period for which reliable data are forthcoming, irrespective of the character of the season, but the period upon which the calculation rests should be indicated in the return.

(G. I., R. & A., Nos. 48-9, dated 21st December 1892; 8-53, dated 23rd February 1893; and 885-53, dated 21st April 1893; *vide* G. Rs. Nos. 269, dated 11th January 1893, 1949, dated 15th March 1893, and 4417, dated 20th June 1893.)

PART VI.—CROP EXPERIMENTS.

1. In carrying out crop experiments nothing with regard to the localities should be suffered to transpire until the experiments are actually made. No crop is to be cut except in the presence and under the personal supervision in the field of a European officer or Deputy Collector, before whom also the threshing out of the crop should be made, and its weight and the area from which it was cut noted down in his own handwriting. It is particularly enjoined on all officers who may be called upon to conduct crop experiments, that Government rely upon their taking a personal interest in the matter and carrying out to the letter the instructions of the Survey Commissioner.

The expenditure need not be restricted to the payment of labourers: a present to the owners or occupants of land whose crops may be operated on, or to any other person who may give zealous assistance, is allowable.

(G. R. No. 3859, dated 6th August 1872.)

2. Government will not lightly accept any excuse for failure to make crop experiments in any district for any year. The subject is most important. (G. R. No. 776, dated 27th January 1883.)

3. The reports on crop experiments should be submitted in print. The Superintendent, Government Central Press, should as usual apply to Government, as soon as he has received the manuscript reports, for instructions as to the number of copies to be printed. (G. R. No. 6752, dated 12th September 1883.)

4. The Governor in Council must impress on all officers concerned the necessity of care and attention in making crop experiments. The absence of such care and attention to the rules entails waste of time and labour, and gives absolutely valueless results. Besides the importance of the results in connection with the incidence of the land revenue and the condition of the peasantry, the habits of observation formed and the information about agriculture gained in making the experiments are invaluable to Government officers, and the evidence of accuracy, patience and intelligence or the want of them which the experiment afford is carefully noted by Government. (G. R. No. 4755, dated 3rd July 1886.)

5. The Director of Land Records and Agriculture, besides criticising experiments *after* they are made, should keep a general watch over the experiments proposed to be made in any year. He should draw up a programme, in consultation with Collectors, of the experiments considered necessary, the tálukas in which and the times at which they are to be made, and should endeavour, by communicating at the proper times with the Collectors concerned, to prevent the matter being lost sight of, as, it is feared,

is too often the case, especially when transfers of District officers have recently been made. Special experiments, no doubt, take up more time than many officers can spare. Allowance must be made for this fact in drawing up the programme mentioned above; but these experiments should, nevertheless, be considered as necessary. (G. R. No. 2823, dated 13th April 1889.)

6. Where the prescribed programme has not been carried out, Commissioners should comment on such omissions by District officers when submitting their remarks on the Director's report. (G. R. No. 2253, dated 31st March 1891.)

7. The Director of Land Records and Agriculture should submit his annual report on crop experiments by the end of the revenue year, so that Government might have the results of crop experiments before them when reviewing the Annual Administration Reports of the District officers. A further advantage would be that the criticisms of the Director could be communicated to experimenters before the following season's experiments were conducted, and an officer would have the opportunity of repeating in the same locality and on the same crop the experiment of the previous year, with special view to the avoidance of any errors pointed out by the Director. To enable the Director to submit his report to Government in time in accordance with the above instructions, the officers conducting experiments should transmit their reports to that officer *immediately on completion of the experiments*. (G. Rs. Nos. 2341, dated 11th April 1690, and 3377, dated 15th May 1890.)

8. The possibility of an officer losing his notes or going on leave, or being transferred to another district before reporting on the experiments he has conducted or subsequently supplying information required to explain his report, should be obviated, and, therefore, the reports should be submitted by experimenters immediately on completion of the experiments. The Director will then be in a position to, and should, make further references to experimenters with the object of clearing up any points in their reports which appear doubtful. (G. R. No. 849, dated 7th February 1888.)

9. In the case of *ordinary* experiment unless the officer conducting the experiment has leisure to deal fully with the question, no attempt should be made at compiling details of cost of cultivation. An *ordinary* experiment ends with the ascertainment of the ratio which the Government assessment bears to the gross produce. Calculations as to cost of cultivation in such experiments are, therefore, of use only in so far as they afford a means of comparison with similar calculations made in the case of *special* experiments, and if they are inaccurate, they are obviously worse than useless. (G. R. No. 2541, dated 11th April 1890.)

In the case of ordinary, as well as special experiments, it would be useful if information regarding the *rent*, as distinct from assessment, paid for the land in question could be given whenever possible. (G. R. No. 2253, dated 31st March 1891.)

10. The form in which the quinquennial return showing the average yield per acre of the principal crops in India will be submitted* is that given in Appendix I to this Circular, and the crops of which the outturn will be shown are those noted against the names of the respective provinces in Appendix II.

These quinquennial returns will be based on information collected every year by enquiry or actual experiment. Rules for the conduct of crop-cuttings have been in force for some years in Bombay and certain other provinces. Copies of the rules adopted in Bombay are annexed, Appendix I.

APPENDIX I.

Return showing the approximate yield per acre of the principal crops in the Provinces (189 —189 .)

NAME OF CROP.		AVERAGE OUTTURN IN LBS. PER ACRE CROPPED.							
		PROVINCE.			DISTRICT A.		DISTRICT B.		&c.
Ordinary name.	Botanical name.	Irrigated.	Unirrigated.	Irrigated and Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	&c.
1	2	3	4	5	6	7	8	9	10

NOTES.—(*a*) Crops should, as far as possible, be classed and entered in the order adopted in Table A. 3 of the Annual Agricultural Tables.

(*b*) The yield should be that of the crop when sown unmixed. In each column the estimate given should be that of the average outturn on average soil in a year of average character as deduced from a consideration of the information obtained or experiments made during the years under review; so that when multiplied by the average area cropped it may give as near an approximation as possible to the outturn of the crop in an average year.

(*c*) It is not necessary that estimates of outturn of each crop should be made for every district; they may be given for selected districts only.

(*d*) *Columns 3 and 4—Provincial Estimate.*—Where the outturn of the crop has been estimated for each district, the average outturn of the province can be estimated by multiplying each district outturn by the area cropped in each district and dividing the total outturns by the total area cropped in the province. Where the outturn has not been estimated for each district, the best estimate possible should be made.

(*e*) *Columns 5, 6, 8, &c.*—In the case of crops not ordinarily irrigated these columns may be left blank.

(*f*) *Column 5.*—Will be obtained by multiplying column 3 by the irrigated area cropped, adding column 4 multiplied by the unirrigated area cropped, and dividing the sum of the above by the total area cropped.

(*g*) A brief memorandum stating the sources of the estimates and the manner in which they have been calculated should accompany the return.

* Under G. I., R. & A., No. 15-52-6, dated 23rd May 1895 (G. R. No. 4678, dated 21st June 1895), this return is to be forwarded to the Director-General of Statistics.

APPENDIX II.

List of crops, the outturn of which is required in the Quinquennial Return of yields.

CROP.		Madras.	Bombay.	Sindh.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	Lower Burma.	Upper Burma.	Assam.	Mysore.	Ajmere.	Coorg.	Berar.
Ordinary name.	Botanical name.														
1 Rice (husked).	Oryza sativa... ...	*a*	*a*	*b*	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*b*	*a*	*b*
2 Wheat ...	Triticum sativum ...	*b*	*b*	*a*	*a*	*a*	*a*	*a*	*b*	*a*	*b*	*b*	*b*	*b*	*a*
3 Barley ...	Hordeum vulgare ...	*b*	*b*	*a*	*a*	*a*	*a*	*b*	*b*	*b*	*b*	*b*	*a*	*b*	*b*
4 Jowár ...	Sorghum vulgare ...	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*b*	*a*	*b*	*b*	*a*	*b*	*a*
5 Bájra... ...	Pennisetum typhoideum.	*a*	*a*	*a*	*b*	*a*	*a*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*
6 Rági	Eleusine coracana ...	*a*	*a*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*
7 Maize ...	Zea Mays	*b*	*b*	*b*	*a*	*a*	*a*	*b*	*b*	*b*	*b*	*b*	*a*	*b*	*b*
8 Gram... ...	Cicer Arietinum ...	*b*	*a*	*a*	*a*	*a*	*a*	*a*	*b*	*a*	*b*	*a*	*b*	*b*	*a*
9 Linseed ...	Linum usitatissimum.	*b*	*a*	*b*	*b*	*a*	*b*	*a*	*b*	*b*	*a*	*b*	*b*	*b*	*a*
10 Til	Sesamum indicum ...	*a*	*a*	*a*	*a*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*b*	*a*
11 Sugarcane (manufactured gur or jaggery.)	Saccharum officinarum.	*a*	*a*	*a*	*a*	*a*	*a*	*a*	*b*	*b*	*a*	*a*	*b*	*b*	*b*
12 Cotton (cleaned).	Gossypium, *sp* ...	*a*	*a*	*a*	*a*	*a.*	*a*	*a*	*b*	*a*	*b*	*a*	*a*	*b*	*a*
13 Rapeseed or mustard.	Brassica campestus...	*b*	*a*	*a*	*a*	*a*	*a*	*b*	*b*	*b*	*b*	*b*	*b*	*b*	*b*

NOTE.—Returns are required for crops marked *a* and are not required for crops marked *b*. There is no objection, however, to Provinces ascertaining the yield of other crops besides those of which returns are required and including them in the return.

The yield given should be in all cases that of the main product of the crop (*e.g.*, grain, manufactured gur or jaggery, cleaned cotton, &c.): if any estimate can be made of the outturn of by-products (*e.g.*, straw, fodder, &c.), these should be added below the estimate of the main product.

STANDING ORDERS ON CROP EXPERIMENTS (BOMBAY).

Introductory.

1. The crop experiments made by Revenue officers, not below the rank of Deputy Collector, are of two kinds—ordinary and special. The former deals with a selected survey number or subordinate number. The latter deals with all the numbers making up a selected holding, and is based on one or more ordinary experiments made on holding or even in part, as will be explained (para. 27) on fields not contained in the holding under enquiry.

A.—Ordinary Experiments.

2. The objects of ordinary experiments are: (1) to ascertain the outturn of the whole number by cutting the crop or crops on small accurately measured areas; and (2) after making a careful valuation of the outturn of both principal and by-products to show the incidence of the assessment *fixed by the Survey and Settlement Department* on the value of the gross produce.

NOTE—By continuous attention year by year, by ledgering the results with notes as to the character of the season, and by careful deductions from numerous recorded results most trustworthy information as to the varying outturn of staple crop and even of minor crops, as to customary rotations, crop mixtures, catch crops, double cropping, and the like will be gleaned; and the burden of the land tax justly estimated

Short Rules and Cautions.

3. Read over the instructions printed on the standard form carefully and fill in *all* the information asked for in the headings to the columns.

4. Do not select a field with an abnormally poor crop, but seek to choose a crop which represents a fair average for the season.

5. Show how you made your selection. Describe shortly the various steps taken in the conduct of the experiment so as to prove that you have maintained the closest personal supervision and have taken due care to prevent any tampering with the cut crop.

6. Remember that you are to estimate the outturn of a whole field by tests on small areas. Be very careful then in measuring, always using chain and cross staff; and if the crop is at all uneven, as it generally is, make up the area of test by patches cut with discrimination in different parts of the fields, but do not cut any patch less than two gunthas, else you risk error.

7. Choose areas of which 40 gunthas is a multiple, to save yourself unnecessary labour in calculations, but do not neglect the prescribed minimum (*vide* remarks on column 8 of Standard Form), else your trouble will be fruitless; and do not err on the other side by cutting very large areas, which will take unnecessary time and labour.

8. Do not attempt to ascertain the cost of cultivation, or the incidence of assessment on net produce, unless your ordinary experiment is to fit in with and help a special experiment, or unless you have unusual facilities.

9. Show simply, but fully, how you arrived at the rate of seeding, rotation, &c.; in fact explain each entry in the tabular statement, so that it may be accepted without lurking suspicion of inaccuracy.

10. Note that the entry (column 12) of local estimate in annas is not to be made with reference to other fields, but is one based on the capabilities of the area of experiment, which vary with the season.

But in your report you should also compare the crop with that of similar crops of the village or taluka of the same season, in order to show how near you have been able to select an average crop of the season (see rule 4 above).

11. Be careful to weigh or measure *grain* and *seeds* well dried. The measure ser is always a heaped measure. If practicable, have the measure filled by a grain-dealer and weigh the contents in a carefully tested balance with Government Rupees as a counterpoise. Repeat the filling and weighing 3 or 4 times for the sake of accuracy. Do this about a week after the crop has been threshed, and keep for that purpose about $1\frac{1}{4}$ sers of the grain or seed.

12. When the test is done, send the exact contents of the local ser to the Director, Land Records

and Agriculture, with your bill of costs or report, noting the test results.

13. Do not confound the weight ser and the measure ser, and remember that the weight of the contents of a measure ser will vary with different grains or seeds, and even with different qualities of the same.

14. Where the weight ser is customary, it will suffice if 2 or 3 tolas weight of the grain or seed of the experiment are sent, so that the sample may be examined.

15. In the case of rice, ground-nut, and other crops, where the crop is generally sold by the producer *with* its husk or shell, be careful to show whether your entries are for the unhusked or unshelled product, or for that with the shell or husk removed.

16. In sugarcane tests show number of canes, weight of canes topped and stripped for the mill, weight of tops, weight of juice, and finally weight of gul, which is the principal product. The by-product is the fresh tops used as fodder. Other by-products need not be noticed.

17. When the incidence (column 27) is very high or very low, comment fully and carefully, showing the reason or reasons, remembering that one of the principal objects is to test the burden of the assessment. *When the selected crop is a poor one in the rotation, or when it is a second crop after one reaped early in the season, or when it is a subordinate row crop, be very careful to intimate the fact clearly.*

B.—Special Experiments.

18. The objects of special experiments are not unlike, but are more extensive than those of ordinary experiments. The special experiment is, as shown above, one on a selected *holding*. The typical holding is one fairly representing the average agricultural holding of the locality cultivated by a holder, who subsists and supports his family on it, and who has no other means of support than the crops raised on his holding. But the typical holding is hard to find at the time which the experimenter can devote to the enquiry.

19. Experimenters are free to select holdings, which may greatly differ from the typical one described, *e. g.*, (1) a holding cultivated entirely by tenants; (2) or entirely by hired labourers; (3) or one occupying only a portion of the time of the holder who lives partly by day labour or by some trade. Again holdings, cultivated by tenants vary in character according to the nature of the agreement between the holder and the tenant.

20. In the typical holding and in holdings which can by careful manipulation be reduced to the type, the main object is to show by exhaustive enquiry what the standard of living of the holder is as compared with that of the day labourer.

21. In other holdings, the main object is to show whether the holding gives a fair return for the labour and money expended on it. Other objects are to show the varying conditions under which the land is sub-let, the profits of investing in land, the rent received by investors or superior holders compared with the assessment, and the like.

22. The enquiries necessitated by special experiments should throw light on the varying methods of tillage; the kinds of manure and the mode of application; the customary usage as to employment and payment of hired labour for weeding, harvesting, &c.; the number of acres tilled by one pair of bullocks; indication of improvement in the methods of tillage by the use of improved implements for cultivation or for preparing the crop for the market; the increase in the growth of crops for export rather than for local consumption; the introduction of new crops, sales of standing crops; in fine, everything connected with the practice and improvement of agriculture.

Short Rules and Cautions.

23. A special experiment comprises one or more ordinary experiments. The details for the component parts of the special experiment should be entered in the prescribed form as for so many ordinary experiments, and the instructions under the head "Ordinary Experiments" are to be observed as far as they are applicable.

24. The size of the holding to be selected for experiment will depend very much on the time which the officer is able to spare, and on the average holding of the tract. It is not convenient to choose very small holdings, while, for obvious reasons, very large ones cannot satisfactorily be dealt with.

25. Officers are advised at first to carry out experiments on holdings cultivated wholly or for the most part with one or two of the chief crops of the district. After making several such experiments, an officer will find it easier to experiment on holdings cultivated with a variety of crops; assisted, as he would be, by the results, *mutatis mutandis*, of the simpler experiments.

26. Where the holding comprises several survey numbers cultivated with the same crop or with different crops, happening to be ripe for cutting at the time of experiment, plots should, if possible, be selected in each field. This should be specially attended to, if widely differing rates of assessment on the several fields disclose the fact that the soils have been classified as of varying quality and productiveness. *Experimenters should be careful to deduct in special experiments the unsown portions of arable lands.*

27. When the average produce of each field has been estimated, as far as possible, by the tests made, it will frequently be found that the outturn of a row crop, or other subordinate crop, cannot be ascertained. Experimenters should endeavour to

supply the deficiency in the best method available. There is a large number of careful experiments in the yearly reports, which may be utilized (provided the results are intelligently applied), or later on in the season the experimenter may find it easy to take an ordinary experiment elsewhere on a crop similar to the unestimated crop. Such experiment should then be embodied with the other component parts of the special experiment. Foresight must be used to prevent, if possible, the choice of a holding containing a crop which cannot be directly or indirectly estimated, unless, indeed, its area is insignificant.

28. The next step (after filling in the tabular statement) is to calculate the gross outturn of the holding. First show exactly the area and assessment of all the component parts of the holding and then compute the outturn of principal and by-products for each part and the seed used for each crop.

29. From this point the treatment will vary according to the nature of the holding. If it be a holding of the kind described above (paragraph 18), then make deductions in kind for (1) seed used, (2) fodder required for plough cattle. Value the balance according to the entries of the tabular statement. If the holder has borrowed seed to be repaid on the crop with interest, deduct the amount to be repaid rather than that actually used.

30. The balance left must be now stated in rupees. Deduct all items of cash expenditure :—

e. g., Local Funds, Irrigation charges, manure purchased; cattle food, as cotton seed which is purchased; hired labour paid in cash or kind. If in kind, the value of the grain, &c., given should be computed. Payments to balutedárs also converted into cash.

Note.—Payments in kind may be deducted with seed and fodder if found more convenient.

31. The balance after the cash deductions goes to pay assessment and to support the holder and his family. Deduct assessment (exclusive of Local Funds, charges of Irrigation Department for water of Government tanks and canals) and then show the number of men and women and children in the holder's family dependant on the holding for support.

Estimate requirements for food, clothing, condiments, &c. Compare the standard of comfort thus disclosed with that of the day labourer.

If milch cattle are kept, they prove an increased standard of comfort. Estimate their requirements for keep and show how it is met. If their milk is sold in part, show how far this meets their keep.

32. If the holder is in debt, show how contracted and how being paid off. Whether increasing or diminishing.

33. Turning now to other kinds of experiments, all that can be done is to give one or two examples,

bearing in mind the remarks in paragraphs 19 and 21 above.

Case A.—Holding of day labourer or village artisan partly supporting himself by agriculture and possessing land and cattle of his own. Show the area and the assessment of the land and the outturn with value of each portion. Make deductions as above, but do not suppose that the bye-products will necessarily feed the cattle for the whole year. If they are not sufficient, show how the cattle are used, when not engaged in the holding. Show as nearly as you can how many days the holder and members of his family are engaged in cultivating the land. Take no notice whatever of the rest. Then show what balance is left to the holder, as a return for the labour and time expended, and comment on the number of months this return will keep him and those of his family, either too young to work or working on the land, and discuss how he supports himself and them for the rest of the year.

If in such a holding the holder has no cattle, the necessary modifications, *e.g.*, cost of hire, should be made.

Case B.—Superior holder sub-letting land at a grain or cash rent. Show agreement between holder and tenant. Show after calculation of outturn the net receipts of holder and compare the value with the assessment. Turning to the tenant, show the cost of labour, human and animal, spent on the cultivation, and cash payment by tenant. Divide outturn between tenant and holder according to agreement, and comment on the return from the tenant's share, for the labour and money spent by him.

Cost of Cultivation.

34. In all special experiments, whether the cost of cultivating each individual crop is an essential part of the enquiry or not, experimenters are expected to make the estimate for each individual crop or crop mixture.

35. First ascertain what operations were actually required and performed for each crop or crop mixture.

36. Study the sample entries for cost given in the Appendix to Report for 1889-90. Show how many bullocks were yoked to the plough, or harrow or seed-drill, and how many men, &c., required.

37. For each operation ascertain by inquiry about how many acres can be covered in a day or, if less than one acre a day, what portion of an acre can be covered in one day.

38. Base the charges for man or woman or child on the local rates for hired labour; so the hire for a pair of bullocks.

39. Show cost of watering, weeding, &c., in the same way.

40. Reduce all estimates to the cost *per acre*, and show by remarks information sufficient to allow of the calculation being fully checked.

41. No form is prescribed, because no one form can be applied to all estimates. The form recommended on page 41 of Report for 1887-88, or those shown in the Appendix to Report of 1889-90, may be selected, or another form may be devised, if necessary, provided home and hired labour are distinguished when necessary, and provided the rates of charges are specified and explained.

Standard Form, Bombay.

Number of Experiments.	Village and táluka.	Survey or subordinate survey No.	Area deducting pót kharáb. A.	G.	Assessment, original or revision survey. Rs.	a.	p.	Kind and extent of irrigation, if any.	Special water-rate, if any, fixed by Settlement Department. Rs.	a.	p.	Area selected for experiment and date of experiment. Gunthas.	Name of crop experimented on with local name to show variety.	Usual rotation.
1	2	3	4		5			6	7			8	9	10

Amount in lbs. (=39 tolas each) of seed.	Sown broadcast or drilled. If latter, with what kind of drill. In what month sown.	Outturn of area of column 8. Yield of grain or other principal product. Local sers (measure).	Equivalent of ditto in lbs. (=39 tolas each) according to actual test. Lbs.	Tolas.	Yield of chaff or other useful bye products. Lbs.	Value of principal product. Rs.	a.	p.	Value of bye-products. Rs.	a.	p.	Principal product, column 19. Lbs.	Bye-products, column 20. Lbs.
16	17	18	19		20	21			22			23	24

NOTE.—One page foolscap size should be used for explanatory remarks required by standing orders.
NOTE.—One printed copy of this form is to be filled in for each special experiment, but as many ordinary experiments may be found convenient may be e
COLUMN 8.—Minimum area for dry-crop ... ... 8 G.
Ditto. garden and rice ... ... 4 G.

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